

ABSTRACT OF THE DISCLOSURE

A bistable microelectromechanical system (MEMS) based system comprises a micromachined beam having a first stable state, in which the beam is substantially stress-free and has a specified non-linear shape, and a second stable state. The curved shape may comprises a simple curve or a compound curve. In embodiments, the boundary conditions for the beam are fixed boundary conditions, bearing boundary conditions, spring boundary conditions, or a combination thereof. The system may further comprise an actuator arranged to move the beam between the first and second stable states and a movable element that is moved between a first position and a second position in accordance with the movement of the beam between the first and second stable states. The actuator may comprise one of a thermal actuator, an electrostatic actuator, a piezoelectric actuator and a magnetic actuator. The actuator may further comprise a thermal impact actuator or a zippering electrostatic actuator.